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VOICE OF THE ELECTRIC UTILITY INDUSTRY

SoCalEd, SDG&E reject merger after state denial

5-0 vote cites competition detriment, few long-term benefits

SAN FRANCISCO—Southern California Edison Co. and San Diego Gas & Electric Co. cancelled their 2.5-year merger campaign on May 16, eight days after state regulators rejected the $2.9-billion deal by a 5-0 vote.

The utilities also dropped their merger petition to the Federal Energy Regulatory Commission. SCE's stock buyout of SDG&E would have made the largest U.S. utility—12.5-million customers.

The utilities could have asked the state public utility commission to reconsider; an appeal to the state supreme court could have followed. The utilities disagreed with the PUC, expressed disappointment, but decided to drop the matter and end the uncertainty. SCE had agreed to pay SDG&E $15 million for merger expenses. Separately, the mayor of San Diego wants reimbursement for the $6.3 million the city spent fighting the merger.

"We are persuaded that the merger *will* have adverse effects on competition in the areas of wholesale transmission and bulk power," emphasized PUC President Patricia Eckert.

"These adverse effects cannot be effectively mitigated," Eckert said.

The PUC also noted that the merged utility would be at greater risk of self-dealing; SCEcorp's Mission Energy develops unregulated power projects.

The state commission concluded that the merger wasn't in the public interest and that the amount of long-term savings wasn't substantial enough.

The two utilities expressed disappointment at the state's finding. They projected savings at $1.8 billion through the year 2000, on an estimated $100 billion in revenue.

Prior to PUC rejection, state administrative law judges (ALJ) recommended against the combination, saying only $1 billion would be saved. A FERC ALJ also recommended rejection.

SDG&E accepted a sweetened SCE offer in November 1988. The utilities extended deadlines, and expressed frustration at the length of the process. In the state proceeding alone, there were 116 witnesses, 795 exhibits, 9613 pages of transcripts and more than 3000 pages of briefs.

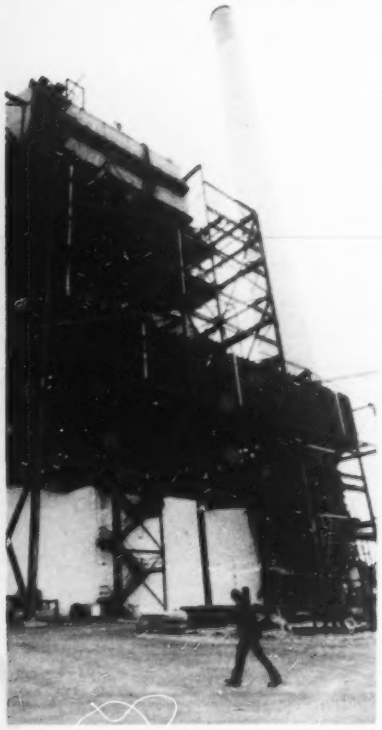
The state PUC code, amended in '89, requires short- and long-term benefits, a mechanism for consumers to reap the savings, and documentation that it causes no harm to competition. It also named seven criteria to determine if any merger is in the "public interest." Each element requires proof by a "preponderance" of evidence. Failure to meet any of these kills the proposal.

The PUC said it didn't think the amended guidelines prevented any merger, but added that "these applicants failed in their effort."

Both utilities had offered a number of other benefits and guarantees. SCE said it would make 400 MW of additional capacity available to municipal utilities, reduce overall pollution, and promised that SDG&E would not incur layoffs.

SDG&E has enjoyed stronger growth recently than its larger neighbor to the north. Without the merger, SDG&E will likely need to seek additional power supplies to meet short-term demand.

BG&E moves up service date for Brandon Shores 2



Baltimore Gas & Electric advanced the service date of the 642-MW Brandon Shores Unit 2 from March '92 to May '91 to meet growing demand. (See story, page 4.)

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LATE NEWS

Senate energy committee mark-up OK'd PUHCA reforms, nuclear plant licensing, and a "WEPCo fix." S.341 hits the floor in June; House hearings mull access.

EPA proposed rules May 20 for SO_2-emission-credit distribution, to include up to 2.8% of total credits. Comments are due in 45 days; a hearing is June 5. The auction would start by March 31, '93; the highest sealed bids win—EPA sets no minimum price, but private sellers could. EPA will sell some credits for $1500 on June 1, '93; unsold ones get auctioned. An April 24 proposed rule covers enforcement and permits.

FERC stayed the Western Systems Power Pool OK and may address members' pricing concerns (p.12). Non-utility generators may join; qualifying facilities would forfeit avoided-cost pricing.

North Korea denied U.S. satellite data showing a brief jump in ground temperatures (40°-95°F) at a small nuclear unit and continued to refuse inspections. International energy officials said the incident's probably not major.

ENSR tentatively agreed to buy PCB retrofill competitor Unison.

SCE and LADWP plan 20% cuts in CO_2 emissions over 20 years.

Square D accepts higher buyout offer

PALATINE, IL—Square D Co. accepted a sweetened $88 per share, $2.23-billion buyout offer from Groupe Schneider S.A. on May 12, after fighting off that French company for months.

The original offer for the electrical equipment manufacturer was $78 per share in February, which Square D called inadequate. The Justice Department said May 10 that it wouldn't challenge the takeover, on anti-trust grounds.

Bid topped desire for independence

More than 70 percent of Square D shareholder had tendered shares, but the company continued to fight acquisition through a variety of legal wrangling. Despite earlier insistence that

Continued on page 6

Top 100 survey reveals 1990 was a real downer for major utilities

BARRINGTON, IL—For the third year in four, the nation's major investor-owned electric utilities suffered reduced net incomes. Common stock earnings also declined in 1990.

These are just two of the results of the 26th Annual Top 100 Electric Utilities survey, completed in mid-April.

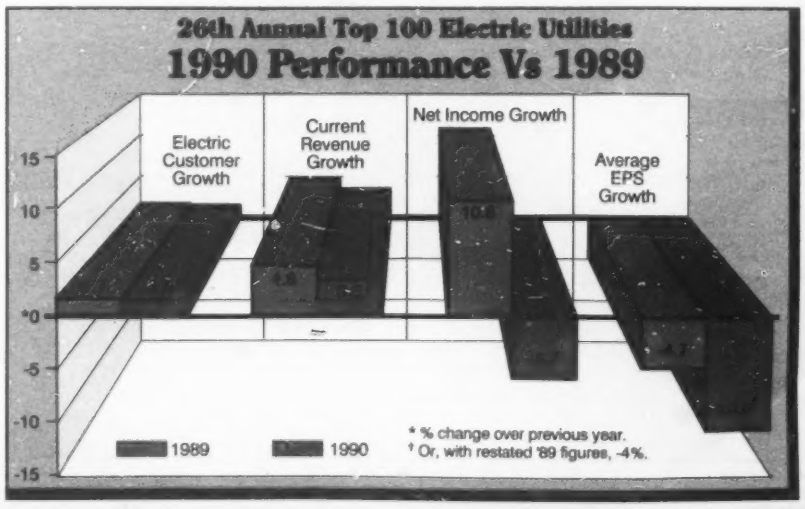
The complete Top 100 Electric Utilities report for 1990 begins on page 21

Overall, the Top 100 utilities enjoyed small gains in kilowatthour sales and revenue production. KWh sales to all classes of customers increased 2.0 percent, largely on the strength of commercial/small power sales, which increased 3.2 percent, and sales to other utilities, which gained 2.7 percent.

Average residential use fell to 9158 kWh in 1990, the second year of decline.

Revenues totalled $171.7 billion in 1990, up 3.5 percent. Of this, revenues from utility operations amounted to 97 percent of the total.

Net incomes slipped to $14 billion, down 5.7 percent, and average earnings per-share earnings dropped 4.0 percent, to $1.98.



News Briefs

JILL MINNER, Special Projects Editor

AEP, universities point engineering students toward power industry

American Electric Power Service Corp. said it has formed an alliance with Ohio State University and Virginia Polytechnic Institute to interest electrical engineering students in the power industry. The "Alliance for Electric Power" has designed a two-part program: the Undergraduate Research Assistant Program supports students with a fellowship in power-oriented research; and the Seminar Series Program invites lecturers from each school and AEP to participate in an information exchange.

EEI distributes utility conservation poster, info kit to schools

A poster depicting utilities' conservation efforts and a packet of stories on environmental issues from national publications are being distributed to schools by the Edison Electric Institute through its High School Grant Program. EEI hopes to heighten awareness of the programs utilities have undertaken to restore, enhance or protect the nation's land and water resources. The poster depicts some of these programs, such as artificial wetlands development, fish restocking and recreational uses.

Personnel briefs

Larry D. Haab was appointed president and chief executive officer of **Illinois Power Co.** Haab has served as president and chief financial officer of the utility since April 1989. He replaces Wendell J. Kelley, who retired June 1.

Upper Peninsula Power Co. Vice President-Administration Clarence R. Fisher was named president, chief operating officer and a director of the company. Fisher succeeds Elio Argentati, who will continue to serve as chairman of UPPCo and chairman and president of UPPCo's parent company Upper Peninsula Energy Corp.

Clarence Fisher

John MacFarlane, president and chief executive officer of **Otter Tail Power Co.**, was appointed chairman, replacing Bob Bigwood, who has retired.

Central Illinois Light Co. has named R. Wayne Slone chairman of the board. He succeeds Robert O. Viets, who is president and CEO of the utility's parent company CILCORP.

Ronald J. Binz will take over as president of the **National Association of State Utility Consumer Advocates.**

UI says conservation program exceeded goal

The United Illuminating Co. (UI) reported that the first-year results of its three-year, $35-million investment in conservation and load management surpassed expectations. UI kicked off 13 different kilowatt- and kilowatthour-saving programs in 1990, which together exceeded the company's goals by 37 percent.

"UI aggressively pursues the installation of cost efficient energy conservation measures, and our work is paying off," stated UI Director of Marketing Tony Vallillo. "These initial results suggest that our investments in conservation will have as real a payback as investment in new generating plants. This is especially important as conservation and load management are increasingly viewed as vital elements of UI's future fuel mix."

NRC proposes changes to licensing fees

The Nuclear Regulatory Commission has proposed revisions to its licensing, inspection and annual fee schedules, that would result in a substantial increase to fees currently charged and would impose fees on many organizations that currently do not pay them. The NRC said the changes are necessary to recover approximately 100 percent of its Fiscal Year 1991 budget, as required by the Omnibus Budget Reconciliation Act of 1990.

According to the commission, the proposed revisions include a $1.8-million increase in the amount of annual fees assessed against operating power reactors, and the assessment of fees for the first time for fuel fabrication facilities, independent spent fuel storage facilities, uranium mills, transportation certificate holders and hospitals, doctors, irradiators, nuclear gauge users and other nuclear materials licensees.

Utilities fined by NRC

The U.S. Nuclear Regulatory Commission reported that it recently proposed the following fines:

Carolina Power & Light
A $50,000 civil penalty for alleged failure to comply with NRC requirements at the Brunswick nuclear power plant. The NRC said the violation was the result of a failure to follow procedures while performing a calibration test of a process computer point on the feedwater control system. The test was performed when the reactor was operating at 100 percent power, when procedures state it should only be performed in cold shutdown or during refueling.

Commonwealth Edison
A $100,000 fine for violation of safety requirements involving a potential leakage path from the reactor containment at Unit 2 of the Dresden nuclear power station.

Georgia Power
A $50,000 civil penalty for alleged violation of NRC requirements at the Hatch nuclear power plant. The proposed fine relates to a review of radiation protection activities associated with a traversing incore probe event on Feb. 11, 1991, which NRC inspectors said created a substantial potential for a radiation overexposure to certain plant personnel.

TU Electric
A $50,000 fine for apparent violation of NRC requirements in some aspects of the fire protection program at the Comanche Peak Steam Electric Station. The NRC said it cited the utility because employees of a TU contractor hired for fire watch patrols falsified records to show that they inspected assigned areas at one-hour intervals when, in fact, they had not done so.

Difference grows between most and least expensive summer rates

Twelve Most Expensive Companies

Company Name	State	Avg. Cost Cents/kWh	Summer 1990 National Rank
Long Island lighting Co.	New York	$0.148	1
Consolidated Edison Co. of N.Y.	New York	$0.146	2
Philadelphia Electric Co.	Pennsylvania	$0.139	3
Commonwealth Edison Co.	Illinois	$0.137	4
Iowa Electric Light & Power Co.	Iowa	$0.135	5
Orange & Rockland Utilities	New York	$0.133	6
Nantucket Electric Co.	Massachusetts	$0.132	7
Toledo Edison Co.	Ohio	$0.131	8
Hawaii Electric Light Co.	Hawaii	$0.131	9
Pennsylvania Power Co.	Pennsylvania	$0.126	10
Duquesne Light Co.	Pennsylvania	$0.126	11
Cleveland Electric Illuminating	Ohio	$0.125	12

Twelve Least Expensive Companies

Companies Name	State	Avg. Cost Cents/kWh	Summer 1990 National Rank
Washington Water Power Co.	Idaho	$0.042	188
Pacific Power & Light Co.	Washington	$0.043	187
Washington Water Power Co.	Washington	$0.044	186
Idaho Power Co.	Oregon	$0.047	185
Idaho Power Co.	Idaho	$0.047	184
Portland General Electric Co.	Oregon	$0.049	183
Kentucky Utilities Co.	Kentucky	$0.050	182
Montana Power Co.	Montana	$0.051	181
Minnesota Power & Light Co.	Minnesota	$0.052	180
Kingsport Power Co.	Tennessee	$0.054	179
Puget Sound Power & Light Co.	Washington	$0.054	178
Nevada Power Co.	Nevada	$0.055	177

Source: National Association of Regulatory Utility Commissioners

The difference between the most and least expensive rates in the country widened last summer, according to the National Association of Regulatory Utility Commissioners' survey of residential electric bills. The spread was more than 10.6 ¢/kWh, or 2.5-times the lowest rate. A year ago the spread was just 1.3-times the lowest rate.

The survey, taken during June, July and August of 1990, showed that the difference between the highest and lowest rates surged from the summer of 1989. The nationwide average cost of electricity was 8.7 cents per kWh in 1990, an increase of 0.4 cents, or 5 percent, from 1989, according to NARUC. The study reported average customer use of 500 kWh per month.

A comparison of regions shows that the Northeast and New England had the highest average electric bills, while the Northwest and Rocky Mountain regions had the lowest average bills. Once again customers in Lewiston, ID, served by Washington Water Power Co., paid the lowest rate for electricity—about 4.2 ¢/kWh, while Long Island Lighting Co. customers in Long Beach, NY, paid the highest rate of 14.8 ¢/kWh.

In its report, the commission noted that simple kWh comparisons may not accurately reflect the true cost of electricity to retail customers, due to the use of energy conservation or demand-side management programs.

In This Issue — Highlights

Industry News

26th Anuual Top 100 Report reveals problems that make 1990 a year many CEOs would like to forget. **1, 21**
Mergers: Calif. denies SCE/SDG&E, NU readies for PSNH acquisition. **1,3**
NERC examines clean-air, non-utility generator reliability effects. **3**
FERC wants to talk to you about something. **4**
NY Power Authority expands employee degree program. **8**

Generation Technology

Detroit Edison retubed the condenser at Fermi-2 to prevent possible contamination. **26**
The Chernobyl accident caused the world to help the Soviets prevent repeats. **26**
How do you protect permafrost when a power plant is sitting on it? **26**
Low-ranked coal may be usable, economically, if this process proves out. **29**

T&D Technology

Reliability indices may be outdated. **32**
Advance weather data helps utility planners. **32**
Meter testing: single-phase or three-phase? **32**
Mobile substations decrease in size but not performance. **34**
DA project bridges gap between real-time data and AM/FM. **39**

Regular Features

Commentary and **Letters** **4**
Rate Activity **13**
Calendar **14**
Labor/Management Concerns **16**
Marketing **18**
Financial Performance **25**
Information/Control Systems **40**
Regulatory Review **41**
New Products **44**
Bulletin Board **47**
Readers' Service **51**
Management Methods **57**

COMMENTARY

Time to do something about serious signs of the times

The disappointing performance of the Top 100 Electric Utilities in 1990 is the sort of thing that makes headlines. It fuels impassioned speakers' pleas for changes in rates or operating procedures to help the industry.

Unfortunately, neither are likely to do much good for the utilities that need relief the most.

Collective poor utility performances, like a flu epidemic, can't be treated effectively except on an individual basis. While some utilities may be very sick financially, neighboring utilities may enjoy considerable good health. Viruses and germs may be all about us, but they don't necessarily effect everyone the same. Ditto for utilities and their problems.

It isn't unusual for an electric utility to have an off year every so often...to run into combinations of conditions that slow growth, or even reverse it in one or more areas...for a short period.

But when large numbers of utilities suffer reverses...then follow one poor year's performance with another even-poorer performance, strong medicines are called for. Such is the case indicated by this year's Top 100 report.

KWh sales growth barely surpassed the rate of customer increase, and average residential use actually declined, reflecting both the mild weather conditions that prevailed throughout much of the year in most parts of the country and the effects of conservation efforts. Low load growth and fewer, smaller rate increases led to only a small increase in revenues, overall. Collective net income fell. Most seriously, share earnings tumbled for the second straight year.

Despite what some commissions and consumerism fanatics believe, withholding rate relief to needy electric utility organizations will benefit customers only in the very short term. Longer-term, financially strong electric utilities, and *only* financially strong electric utilities, can provide reliable electric service, at favorable rates.

Customers need adequate and reliable electric supply, utilities need reasonable and fair rates and providers of capital need a realistic return. The only real solution is for utility managements and regulators to be able to sit down and discuss developments affecting utilities, and how best to accommodate them while still protecting the environment and consumers interests.

That will require all sides to go beyond we-them attitudes, finger pointing and gross accusations about the past, and will take hard, open negotiation to optimize future actions. Political posturing must be eliminated and actions focused on realistic long-term planning...not easy, but long overdue.

Robert A. Lincicome, Editor-in-Chief

FERC seeks input on present, future

WASHINGTON—Federal energy regulators want *you*...to comment on the current state of and future direction for the electric utility industry.

The Federal Energy Regulatory Commission—for a June 18 public conference—invites representatives from utilities, state regulatory commissions, federal agencies, consumer groups, public power groups, cogenerators and any others, to "express their views on the future regulation of electricity markets at the federal level and interaction of this regulation at the state level."

FERC will accept written comments, and requests to participate for an extended period, until June 10. The deadline for comment and participation was extended from May 15.

The commission said that "rapidly emerging changes in the industry," such as independent and affiliated power producers and marketers, increased competition, reorganizations and mergers mean "it is an appropriate time to provide for public discussion of major issues affecting the electric industry and consumers."

FERC also cited the impacts of Clean Air Act Amendments, the National Energy Strategy, and other issues raised by state regulators and the industry as the reason for the conference.

Requests to participate and comments should be filed separately to FERC's Office of the Secretary, 825 N. Capitol St., NE, Washington, DC 20426, 202/208-0200.

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LETTERS

UG power delivery

I read, with great interest, articles in the April issue of *EL&P* about underground power delivery. I was disappointed that the historical perspective by T. A. Balaska left out information about who invented underground cable—Thomas A. Edison—according to the U.S. Patent Office.

In Dec. 1880, Edison's men completed an underground power distribution system for the Menlo Park, NJ, laboratory. Edison filed for a basic patent on underground cable on April 22, 1881, and received Patent No. 251552 on Dec. 27, 1881. A considerably more significant contribution to underground practices was a patent filed in 1880 (and granted in 1884) that defined the principles of feeder and mains distribution.

Bob Landman
H & L Instruments

P.S. In the January 1991 issue, in the 1991 forecast, you had several news items pertaining to fiberoptics (note that we prefer the one word, as do some of the optics journals). I am unfamiliar with the IEEE groups and would like to know who to contact in the Fiberoptics subcommittee, the PES Communications committee and the New Concepts subcommittee. Would you please give me names and phone numbers as I would like to join these groups.

Editor's note:

For the benefit of reader Landman, and other readers as well, here are the names and addresses of the requested committee chairpersons at IEEE: Power System Communications Committee—G.L. Nissen, Los Angeles Department of Water & Power, 1216 W. First Street, Los Angeles, CA 90026; New Concepts Subcommittee—W.P. Malcolm, Electric Power Research Institute, 3412 Hillview Ave., PO Box 10412, Palo Alto, CA 94303; Fiber Optics (sic) Subcommittee—R. Whapham, Preformed Line Products, PO Box 91129, Cleveland, OH 44101.

High reliability

The January 1991 edition of your publication had an article titled "Lilco-baseload steam marks reliability high." Long Island Lighting Co.'s reported baseload steam unit forced-outage rate of 1.93 percent for the 12 months ending September 1990 is certainly a noteworthy achievement. However, we at Hawaiian Electric Co. have recorded a forced-outage rate for our baseloaded steam units of 1.76 percent for the year 1990.

Unfortunately, this was almost double the forced-outage rate of 0.89 percent experienced in 1989.

Over the past five years, we have enjoyed forced-outage rates on our baseloaded steam units that range from a low of 0.39 percent in 1986 to a high of 2.17 in 1987:

Year	EFOR
1986	0.39%
1987	2.17%
1988	1.61%
1989	0.89%
1990	1.76%

This remarkable record is the combined forced-outage rate of our eight baseloaded steam units that range in size from 90 MW to 144 MW.

David M Rodrigues
Vice President-Operations
Hawaiian Electric Co.
Honolulu, HI

Editor's note:
HECo certainly is to be congratulated on its operational record. Obviously the company's insular location demands a very high level of engineering and maintenance effort, which certainly is documented by its low forced-outage record.

Maine Yankee expects May restart after April 29 non-nuclear fire

WICASSET, ME—Maine Yankee nuclear plant operators expect the plant will restart by the end of May, after an April 29 fire.

Plant officials say the force of a power transformer explosion ruptured hydrogen cooling lines to the generator, and caused a surge in a neutral connection to the generator that then ignited a hydrogen fire.

The 345-kV, 430/481 MVA, transformer was replaced with a spare, and fire damage repaired. Maine Yankee's investigation into the transformer-failure cause continues.

No significant damage was done to the plant generator. The fire caused the turbine to trip almost immediately. The reactor shut down automatically as designed, at 6:32 p.m. The fire was controlled shortly, but wasn't extinguished until 10 p.m. when the turbine hall was flooded with CO_2 to smother flames.

"When you've got hydrogen and electricity in the same area, you don't want use a lot of water to put out a fire," said a plant spokesman.

Plant workers, contractors, the Coast Guard and Maine environmental officials had to clean about 200-gal of PCB-free oil that spilled from the transform-

Continued on page 8

BG&E hurries coal unit construction

BALTIMORE—Slower demand growth delayed this power plant by 13 years, but renewed customer demand now has advanced the new service date for Unit 2 by 10 months (see photo, p. 1).

Baltimore Gas & Electric Co. planned to start operation of Brandon Shores Unit 2 in late May, 10 months earlier than previously expected because of growing customer demand.

The utility's supervision of on-site construction contributed to budget cuts of approximately $43 million, for the $670-million unit.

BG&E originally planned two oil-fired Brandon Shores units for operation in 1977 and 1978. Readjustment in demand curves, and fuel supply, postponed unit one until May 1984 and prompted a switch to coal-firing, with an electrostatic precipitator.

The seven-year wait for Unit 2 allowed design and equipment upgrades including automation/controls, coal handling, boiler, and cooling tower. Equipment suppliers included: Gilbert/Commonwealth Inc., Babcock & Wilcox Co., General Electric Co., Westinghouse Electric Corp., Foster Wheeler, Zurn Constructors, and Bailey Controls.

Rates increased $124 million in May, but the fuel rate fell by $52 million.

26th Annual Top 100 Electric Utilities Report

1990 was no picnic for major electric utilities

The nation's largest investor-owned electric utility companies posted expected increases in customers served, kWh sales and revenues. But net incomes and earnings-per-share dipped. It wasn't a great year!

Robert A. Lincicome
EL&P Editor-in-Chief

For the top managements of a majority of the nation's largest investor-owned electric companies—the Top 100 Electric Utilities— 1990 was a year they would just as soon forget. It was anything but good.

Performances during the year were mixed, but where positive gains count most—net income and earnings per share of common stock—the year was terrible. Last year, we reported that 1989 performance figures masked serious problems for the Top 100. This year's figures reveal just how serious those problems have become for major electric utilities companies.

Sales, revenues up, but...

Customers served, kilowatthour sales and revenues all were up in 1990, but by smaller percentages than during 1989.

The Top 100 served 83.3-million electric customers in 1990, which represented an increase of 1.5 percent. In 1989, customer growth was 1.7 percent. At the same time, the number of gas customers served by the Top 100 electric utilities rose by 1.8 percent. A total of 47 electric utilities also provide gas service.

Kilowatthour sales to all customers rose by 2.0 percent, to a record 2.3-trillion kWh. By way of comparison, kWh sales in 1989 grew by 2.6 percent, a rate lower than in the previous several years. Growth in kWh sales averaged just 2.7 percent per year over the previous five years.

Especially worrisome were residential sales, which only edged up by 1.5 percent in 1990, the same increase as reported for the number of customers added. In other words, actual customer usage did not increase at all, but actually declined slightly. The decline was less than 1 percent, however.

Naturally, increased kWh sales produced increased revenues...to a record $171.7 billion. But the increase, 3.5 percent, lagged 1989's increased performance by 27 percent.

...income and earnings fell

Net income available for common shares, after taxes and provisions for preference stock, fell again, for the third consecutive year and the total was well below the current record income posted in 1984. The decrease from 1989's $14.9-billion income was 5.7 percent. In 1984, for comparison, net income for the Top 100 was reported to be $16.7 billion, which still stands as a Top 100 record.

Per-share earnings for common stockholders fell 4.0 percent, to an average $1.98 per share. While just eight companies had negative earnings, or deductions from equity, only 50 companies posted positive gains; the remaining 42 had earnings that were equal to or less than a year earlier.

The lackluster performance is hurting utilities in the financial market today as many analysts, brokers and dealers are advising clients to stay away from utility stocks, which they see as continuing to underperform the balance of the market.

External forces pressure utilities

The difficulties utility managements encountered in 1990 were largely beyond their control. First, there were problems of the developing recession, especially with reductions of activities in the manufacturing sector of the economy. Then temperatures in most parts of the country were milder than normal, resulting in lower kilowatthour usage by consumers, and lower revenues for utilities.

The effects of these two factors were exacerbated by recalcitrant state utility commissions that continued to maintain their punitive attitudes toward various utilities with nuclear projects, as well as to rate requests in general.

Milder weather and the effects of the recession combined in 1990 to reduce the rate of kilowatthour sales growth. In 1990, total sales climbed just 2 percent, to 2.288-trillion kWh.

The 2.0-percent kWh sales increase in 1990 rate compares with a sales growth rate of 2.6 percent a year earlier and reflects a continued slide back to the kWh sales growth rates of the post Oil Embargo period. The 1990 sales growth rate is less than half the rate realized just two years ago, when it hit a post-Embargo high of 5.3 percent.

The 2.288-trillion kWh amount sold in 1990 was another record, however, as expected.

Milder temperatures tempered customer use of electricity during both peak winter and summer periods in 1990. Sales to customers in nearly all classes fell late in the year, compared with sales increases brought on by exceptionally cold December weather in 1989.

However, there were compensating differences. Revenues for a cold-spell that stimulated December 1989 sales showed up as 1990 revenues, which provided a welcome boost.

Actually, kWh sales to two classes of customers edged higher in 1990, while they fell for two other classifications of customers.

EARNINGS TABLE

Company	Rank	% Change From 1989	1990 Earnings Per Share,$	1989 Earnings Per Share,$
Portland General*	1	474.14	2.17	-0.58
Boston Edison	2	328.41	2.01	-0.88
Long Island Lighting	3	256.29	2.36	-1.51
Entergy*	4	205.63	2.44	-2.31
United Illuminating	5	160.48	3.55	-5.87
Pinnacle West Capital*	6	117.61	1.12	-6.36
Northern Indiana Public Service	7	81.00	1.81	1.00
IE Industries*	8	77.49	4.10	2.31
New England Electric*	9	74.15	4.11	2.36
El Paso Electric	10	71.34	-0.96	-3.35
Illinois Power	11	64.75	-1.53	-4.34
Kansas Gas & Electric	12	47.06	2.00	1.36
SCANA Corporation* (SCE&G)	13	46.05	4.44	3.04
LG&E Energy Corp.*	14	34.69	4.31	3.20
Washington Water Power*	15	28.15	3.46	2.70
Montana Power Co.	16	26.90	1.84	1.45
Detroit Edison	17	23.02	3.26	2.65
Central & South West*	18	16.62	3.79	3.25
Wisconsin Power & Light	19	15.54	2.23	1.93
Puget Sound Power & Light	20	14.89	2.16	1.88
Orange & Rockland Utilities	21	12.74	3.54	3.14
San Diego Gas & Electric	22	11.75	3.52	3.15
Southwestern Public Service	23	11.43	2.73	2.45
Oklahoma Gas & Electric	24	10.82	3.38	3.05
Pacific Gas & Electric	25	10.53	2.10	1.90
DQE*	26	10.34	2.24	2.03
KPL Gas Service	27	9.76	2.25	2.05
Southern Indiana Gas & Electric	28	7.47	3.02	2.81
Dominion Resources*	29	5.80	4.38	4.14
Union Electric	30	4.98	2.74	2.61
Madison Gas & Electric	31	4.79	3.06	2.92
Utilicorp United	32	4.41	2.13	2.04
Central Hudson Gas & Electric	33	4.39	2.38	2.28
Central Louisiana Electric	34	4.23	3.70	3.55
TECO Energy*	35	3.81	2.45	2.36
Carolina Power & Light	36	3.81	4.36	4.20
Otter Tail Power	37	2.58	1.99	1.94
Empire District Electric	38	2.30	3.12	3.05
DPL*	39	2.29	2.23	2.18
Pacificorp	40	2.21	1.85	1.81
Public Service of New Hampshire	41	1.78	-4.96	-5.07
Duke Power	42	1.69	2.40	2.36
IPALCO Enterprises*	43	1.57	2.58	2.54
St Joseph Light & Power	44	1.22	2.48	2.45
Southern California Edison*	45	1.12	3.60	3.56
Northeast Utilities*	46	1.04	1.94	1.92
Wisconsin Public Service	47	1.01	2.00	1.98
Gulf States Utilities	48	1.00	-0.99	-1.00
CIPSCO Inc.*	49	0.52	1.92	1.91
General Public Utilities*	50	0.20	5.02	5.01
Centerior Energy*	51	0.00	1.90	1.90
Iowa Southern*	52	-0.28	3.54	3.55
Texas Utilities*	53	-0.90	4.40	4.44
New York State Electric & Gas	54	-1.98	2.48	2.53
Public Service Enterprise Group*	55	-2.29	2.56	2.62
Pennsylvania Power & Light	56	-2.47	3.95	4.05
Allegheny Power System*	57	-2.96	3.61	3.72
Green Mountain Power	58	-2.97	2.29	2.36
TNP Enterprises* (Tex NM Power)	59	-3.16	1.84	1.90
Wisconsin Energy*	60	-3.82	2.77	2.88
Public Service of Colorado	61	-3.86	2.49	2.59
Cincinnati Gas & Electric	62	-5.07	4.12	4.34
Public Service of Indiana	63	-5.17	2.20	2.32
Iowa-Illinois Gas & Electric	64	-5.24	1.99	2.10
Consolidated Edison	65	-6.02	2.34	2.49
Kansas City Power & Light	66	-6.04	3.11	3.31
Central Vermont Public Service	67	-6.18	2.43	2.59
Interstate Power	68	-6.23	2.56	2.73
Central Maine Power	69	-12.50	1.68	1.92
Northern States Power	70	-12.65	2.83	3.24
Kentucky Utilities	71	-15.09	1.97	2.32
Rochester Gas & Electric	72	-18.10	1.72	2.10
Minnesota Power	73	-18.28	2.37	2.90
American Electric Power*	74	-18.46	2.65	3.25
Atlantic Energy*	75	-19.25	3.02	3.74
Idaho Power	76	-19.41	1.91	2.37
Houston Industries*	77	-19.58	2.67	3.32
Bangor Hydro-Electric Company	78	-20.42	1.52	1.91
Ohio Edison	79	-23.39	1.67	2.18
MDU Resources Group	80	-24.34	1.43	1.89
Cilcorp*	81	-24.86	2.69	3.58
Potomac Electric Power	82	-25.00	1.62	2.16
Southern Company*	83	-28.73	1.91	2.68
Midwest Resources Inc.*	84	-30.56	1.25	1.80
Baltimore Gas & Electric	85	-31.15	2.10	3.05
Hawaiian Electric*	86	-33.99	2.02	3.06
Commonwealth Energy System*	87	-47.83	2.16	4.14
Eastern Utilities Associates*	88	-48.14	1.53	2.95
Nevada Power	89	-56.91	0.78	1.81
Niagara Mohawk Power	90	-61.54	0.30	0.78
Delmarva Power & Light	91	-66.67	0.60	1.80
Philadelphia Electric	92	-75.42	0.58	2.36
Sierra Pacific Power	93	-82.93	0.35	2.05
Centel*	94	-85.32	0.75	5.11
Commonwealth Edison	95	-92.23	0.22	2.83
Public Service of New Mexico	96	-113.29	-0.23	1.73
FPL Group* (FP&L)	97	-191.67	-2.86	3.12
Florida Progress* (FPC)	98	-191.67	-2.86	3.12
CMS Energy*	99	-259.74	-6.07	3.80
Tucson Electric Power	100	-336.62	-15.50	-3.55

SALES DATA

Company	1990 Total Sales (KWH) Rank	% Increase	Average Annual Growth 1985-1989	1990 Sales (KWH) By Type of Customer (% of Sales) Resid.	Comm.	Indus.	Other	Average Annual Residential Use 1990	1989	Ratio of Long-Term Debt to Net Plant 1990	1989
Cincinnati Gas & Electric	1	15.21	4.20	28.43	22.47	24.44	24.66	10,421	11,058	46.13	42.07
Pinnacle West Capital*	2	13.08	5.03	29.22	33.21	14.45	23.12	11,033	11,077	48.32	45.13
LG&E Energy Corp.*	3	12.03	5.56	25.01	22.13	23.35	29.50	10,132	10,182	31.57	38.66
Portland General*	4	10.86	0.21	31.81	27.19	18.31	22.68	12,496	12,568	42.35	45.49
Centel*	5	10.69	-0.48	27.41	29.38	21.48	21.73	7,077	6,848	0.00	0.00
Nevada Power	6	9.91	6.23	42.70	19.52	31.78	6.00	13,331	13,624	58.12	60.30
Sierra Pacific Power	7	9.80	6.37	26.00	33.70	35.45	4.85	7,397	7,449	46.06	45.98
Iowa Southern*	8	9.49	4.86	32.05	16.42	42.23	9.30	8,837	8,539	35.91	36.65
Washington Water Power*	9	6.15	1.57	26.21	20.22	12.67	38.90	13,383	13,621	53.70	54.49
Pacific Gas & Electric	10	6.15	1.56	31.36	34.93	21.97	11.74	6,443	6,468	47.41	48.89
Gulf States Utilities	11	5.46	-1.06	23.59	18.60	46.08	11.72	13,795	13,228	41.04	46.21
Entergy*	12	5.44	0.92	29.28	20.91	36.73	13.09	12,177	11,639	52.76	54.47
Northern States Power	13	5.29	3.50	24.25	14.16	43.37	18.22	7,668	7,779	31.34	32.00
Philadelphia Electric	14	5.00	3.23	28.61	14.77	48.25	8.38	7,553	7,655	53.83	52.42
Oklahoma Gas & Electric	15	4.69	-0.04	31.11	21.86	27.62	19.40	11,501	10,916	38.53	38.74
San Diego Gas & Electric	16	4.50	4.77	35.94	37.53	21.06	5.46	5,580	5,447	39.06	37.72
Puget Sound Power & Light	17	4.22	3.51	42.74	28.44	18.19	10.63	12,848	13,430	56.14	55.50
TECO Energy*	18	4.18	1.82	40.28	31.49	20.97	7.26	13,489	13,258	32.00	32.30
Hawaiian Electric*	19	4.17	3.98	27.66	26.43	45.20	0.71	7,416	7,318	33.21	31.89
Boston Edison	20	4.08	2.18	23.97	50.18	12.23	13.62	6,150	6,160	46.65	42.71
Southern Company*	21	4.03	0.92	23.26	20.83	32.29	23.62	11,637	11,287	42.89	43.40
Southern Indiana Gas & Electric	22	3.99	5.83	20.11	17.93	32.70	29.26	11,203	11,199	43.80	42.92
Empire District Electric	23	3.97	0.52	32.59	23.88	20.61	22.91	10,744	10,399	41.11	40.50
Central Louisiana Electric	24	3.93	2.28	39.47	17.69	34.97	7.88	12,526	12,164	38.00	31.44
Utilicorp United	25	3.88	0.39	39.15	22.50	16.82	21.53	10,516	10,385	61.59	43.60
Kansas City Power & Light	26	3.77	2.98	31.44	45.93	20.87	1.75	9,287	8,877	33.79	39.54
Interstate Power	27	3.77	3.05	21.37	16.85	55.58	6.20	7,704	7,632	38.66	43.38
Central & South West*	28	3.77	0.23	29.71	24.64	31.95	13.71	11,238	10,908	33.28	35.30
Wisconsin Public Service	29	3.69	4.06	23.51	24.57	30.36	21.56	7,495	7,450	33.77	31.58
Midwest Resources Inc.*	30	3.68	7.81	27.67	22.77	26.88	22.67	8,600	8,637	42.78	43.53
Minnesota Power	31	3.61	4.95	8.54	8.53	72.87	10.06	8,303	8,297	53.24	51.75
Southern California Edison*	32	3.58	1.28	31.19	35.56	21.00	12.25	6,335	6,217	46.50	46.35
Eastern Utilities Associates*	33	3.57	2.74	28.83	30.47	15.80	24.90	6,221	6,226	57.98	52.31
Kentucky Utilities	34	3.44	4.06	29.53	21.84	20.54	28.08	11,546	11,923	46.66	44.77
TNP Enterprises* (Tex-NM Power)	35	3.37	-1.22	31.13	22.44	44.35	2.08	11,613	11,236	48.05	37.14
SCANA Corporation* (SCE&G)	36	3.36	2.83	33.04	28.50	29.45	9.02	13,330	12,891	36.82	41.07
Otter Tail Power	37	3.29	-0.82	28.08	15.29	37.77	18.86	10,098	10,239	32.69	29.42
Houston Industries*	38	3.04	0.65	28.04	20.47	49.67	1.82	13,849	13,271	40.89	42.05
Northern Indiana Public Service	39	3.03	1.62	17.30	18.82	60.77	3.11	6,841	6,854	35.56	38.10
Madison Gas & Electric	40	2.98	3.30	27.70	56.85	6.95	8.49	6,471	6,474	39.04	40.71
Green Mountain Power	41	2.83	4.95	32.06	62.21	5.71	0.00	8,658	9,049	46.80	46.80
Pacificorp	42	2.81	15.65	22.12	18.31	39.25	20.32	10,283	10,209	43.78	45.20
New York State Electric & Gas	43	2.46	1.33	29.64	18.03	17.69	34.85	7,796	7,786	48.91	50.92
Florida Progress* (FPC)	44	2.39	4.92	45.74	27.00	12.73	14.53	12,319	12,059	33.18	33.19
St Joseph Light & Power	45	2.37	3.36	38.81	28.90	31.33	0.96	9,897	9,615	29.64	33.37
Delmarva Power & Light	46	2.33	5.39	27.81	26.89	28.36	16.94	9,524	9,639	43.06	41.72
Public Service of Indiana	47	2.21	2.73	26.73	22.78	36.39	14.10	10,962	11,314	37.20	37.54
Public Service of Colorado	48	2.19	2.49	27.56	50.50	16.79	5.15	6,445	6,348	31.93	36.63
Texas Utilities*	49	2.18	2.34	33.51	29.62	27.04	9.83	14,046	13,747	42.71	40.13
Iowa-Illinois Gas & Electric	50	2.16	1.78	25.95	27.67	43.50	2.88	6,874	6,696	38.16	40.75
Rochester Gas & Electric	51	2.02	1.26	26.91	24.61	25.05	23.43	7,044	7,101	45.67	49.45
Potomac Electric Power	52	1.91	3.83	25.55	42.76	21.52	10.17	10,605	10,719	43.18	39.94
El Paso Electric	53	1.89	7.46	22.03	24.80	13.10	40.06	6,082	6,124	55.36	52.12
Atlantic Energy*	54	1.83	4.57	42.13	39.49	17.74	0.64	8,251	8,382	38.45	43.72
Commonwealth Edison	55	1.71	2.63	26.69	30.28	30.08	12.96	6,718	6,647	39.76	37.34
American Electric Power*	56	1.68	2.50	21.20	15.57	32.78	30.44	10,530	10,953	44.53	47.55
Orange & Rockland Utilities	57	1.65	4.78	36.91	25.60	35.07	2.41	6,893	6,922	48.56	40.20
FPL Group* (FP&L)	58	1.55	5.14	51.00	40.42	6.19	2.39	11,955	11,895	37.88	38.18
Consolidated Edison	59	1.54	3.63	27.80	67.03	3.63	1.54	3,840	3,884	39.39	38.12
IPALCO Enterprises*	60	1.27	2.90	31.47	20.38	47.40	0.75	10,514	10,668	36.66	37.45
Central Hudson Gas & Electric	61	1.05	2.50	26.60	25.39	33.69	14.32	6,940	7,011	4.97	54.51
Union Electric	62	0.99	2.09	32.22	33.75	28.60	5.43	10,283	10,289	38.18	41.31
Central Maine Power	63	0.83	3.39	33.51	25.14	39.71	1.64	7,115	7,382	48.73	45.28
Cilcorp*	64	0.78	3.22	30.35	24.21	44.50	0.94	9,171	9,206	34.10	34.50
IE Industries*	65	0.77	1.39	33.18	28.74	29.07	9.01	8,405	8,329	33.31	38.06
Illinois Power	66	0.63	1.96	26.49	18.70	48.62	6.19	8,585	8,755	52.09	52.98
General Public Utilities*	67	0.61	3.08	34.53	30.38	31.89	3.20	8,146	8,260	35.36	36.26
Southwestern Public Service	68	0.46	1.79	13.15	13.48	37.98	35.39	8,311	7,934	37.09	40.00
Niagara Mohawk Power	69	0.42	0.06	29.01	32.70	33.41	4.89	7,570	7,700	56.76	57.04
DPL*	70	0.35	4.04	32.67	21.68	31.34	14.31	10,148	10,705	47.73	51.53
CIPSCO Inc.*	71	0.25	0.14	32.11	12.59	49.18	6.12	9,164	9,196	38.60	38.91
Northeast Utilities*	72	0.22	7.33	32.08	30.33	18.40	19.19	8,304	8,460	49.24	50.12
KPL Gas Service	73	0.12	1.36	24.50	30.09	19.92	25.49	9,117	8,618	35.13	33.62
Detroit Edison	74	0.03	2.12	28.36	21.40	46.06	4.16	6,583	6,668	57.09	55.38
CMS Energy*	75	0.02	1.59	32.20	28.40	36.90	2.50	7,321	7,361	82.35	83.62
Duke Power	76	-0.02	3.90	25.71	22.44	38.66	13.19	12,444	12,459	36.72	35.65
New England Electric*	77	-0.06	3.33	35.84	36.52	23.73	3.91	6,824	7,089	41.24	42.94
Kansas Gas & Electric	78	-0.08	4.06	25.40	20.57	34.61	19.42	9,951	9,248	44.37	38.75
Pennsylvania Power & Light	79	-0.20	4.66	29.20	24.67	25.19	20.94	9,947	10,064	36.26	39.05
Baltimore Gas & Electric	80	-0.69	5.17	38.25	10.48	51.27	0.00	10,209	10,438	45.41	41.11
DQE*	81	-0.75	1.15	22.57	38.39	24.17	14.86	5,953	6,060	49.28	50.42
Bangor Hydro-Electric Company	82	-0.80	3.26	32.42	30.27	35.56	1.76	6,376	6,548	61.39	53.26
Wisconsin Power & Light	83	-0.99	1.84	27.00	15.49	33.39	24.12	8,471	8,655	33.80	30.32
Public Service Enterprise Group*	84	-1.47	3.06	26.89	46.44	25.38	1.29	6,128	6,221	37.81	37.75
Ohio Edison	85	-1.78	2.07	24.04	20.34	31.53	24.08	8,159	8,336	51.33	50.54
United Illuminating	86	-1.93	2.02	35.10	43.41	20.38	1.11	6,627	6,814	70.42	63.30
MDU Resources Group	87	-1.94	2.37	33.62	16.12	33.54	16.72	7,689	7,876	46.37	47.03
Dominion Resources*	88	-2.03	5.19	34.79	30.62	16.49	18.10	12,156	13,109	43.23	46.81
Carolina Power & Light	89	-2.13	4.59	24.80	18.99	30.55	25.67	12,279	12,419	43.26	40.16
Montana Power Co.	90	-2.34	3.72	20.46	21.92	32.92	24.70	8,812	9,094	50.46	48.29
Long Island Lighting	91	-2.48	3.98	42.86	NA	51.01	6.13	7,844	7,933	157.75	163.96
Wisconsin Energy*	92	-2.62	5.92	26.20	25.17	37.05	11.59	7,709	7,691	43.91	52.77
Centerior Energy*	93	-2.87	2.18	24.86	25.56	45.42	4.13	7,079	7,295	44.96	42.43
Allegheny Power System*	94	-3.31	4.95	19.70	11.67	28.88	39.75	10,011	9,950	40.65	40.32
Commonwealth Energy System*	95	-5.71	4.61	25.33	28.41	6.63	39.63	6,555	6,591	42.76	37.46
Idaho Power	96	-7.46	-1.22	26.35	16.15	29.53	27.98	14,281	14,923	38.69	38.03
Tucson Electric Power	97	-10.15	-0.90	30.69	17.71	39.29	12.31	8,621	8,879	31.31	72.87
Public Service of New Mexico	98	-10.47	1.53	21.98	31.67	13.95	32.40	6,129	6,066	44.45	44.38
Central Vermont Public Service	99	-10.47	4.92	32.51	28.27	13.39	25.83	7,697	8,066	42.38	42.83
Public Service of New Hampshire	100	NA	NA	NA	NA	NA	NA	NA	NA	67.58	66.85

TABLE I: THE TOP 10 IN KWH SALES

RANK '90	RANK '89	COMPANY	KWH SALES (billions)	'90 % Change
1	1	Southern Company*	142.4	4.03
2	2	American Electric Power*	119.5	1.68
3	3	Texas Utilities*	83.7	2.16
4	4	Commonwealth Edison	74.1	1.71
5	8	Pacific Gas & Electric	73.4	6.15
6	5	Southern California Edison	71.6	3.58
7	6	Duke Power	67.0	-0.02
8	7	FPL Group (FP&L)*	65.7	1.55
9	10	Entergy*	62.1	5.44
10	11	Houston Industries*	59.6	3.04

Residential sales moved ahead 1.5 percent, just 0.1 percent better than a year earlier. Total residential sales were 661-billion kWh.

The greatest increase in sales occurred to commercial customers, which purchased 3.2 percent more kWh than in 1989. Commercial sales totaled 579-billion kWh. Although this was the largest gain, the rate remained 38 percent below the commercial kWh increase in 1989.

Sales to commercial customers rose 5.2 percent in 1989, to 579-billion kWh.

Industrial sales increased 1.1 percent in 1990, to 661-billion kWh. This was just a half-percent greater than a year earlier. For 1989, industrial sales eked out just a 0.6-percent gain, reflecting directly the lackadaisical progress of industrial output and productivity.

Sales to "Other" customers rose 2.7 percent in 1990. While this was one of the brighter areas of progress, the increase represented a slowing in the growth rate from last year. For 1989, sales to other customers—which includes other utilities, municipalities, co-ops, railroad and other special customers—increased 4.9 percent.

Overall, 76 utilities reported increases in kWh sales in 1990. This compares with 79 utilities that posted gains in 1989 and 99 utilities in 1988.

Largest gain, 15.2 percent, was posted by Cincinnati Gas & Electric Co, which recorded total sales of 13.6-billion kWh. Runnerup was Pinnacle West Capital, which recorded a gain of 13.08 percent to 19.8-billion kWh, largely on the strength of sales to other utilities. Third-best sales gain was recorded by Louisville Gas & Electric, whose 12.0-percent overall sales increase was fueled by a strong jump in sales to other customers and utilities.

Median sales growth, 2.14 percent, was slightly higher than 1989's 1.84 percent. While this is an improvement, the increase reflects only a return to pre-1989 levels. Last year's performance was well off the trend line of recent years. At best, median sales growth in 1990 can be said to be a return to normal.

The *largest* sellers of electricity were virtually the same as in 1989, although there were changes in relative position. As shown in Table I, the first four companies, perennial #1 Southern Company, followed by American Electric Power, Texas Utilities and Commonwealth Edison, remained the same as in 1989. Pacific Gas & Electric, which recorded the 10th best sales gain, 6.15 percent, moved from 8th in '89 to 5th in 1990, displacing Southern California Edison, which slipped to 6th in 1990. Duke and FPL Group slipped one place in 1990, to 7th and 8th, respectively.

TOTAL REVENUES '90

Rank '90	Rank '89	COMPANY	$ REVENUES (millions)	'97 % Change
1	1	Pacific Gas & Electric	9,470	10.27
2	2	Southern Company*	7,975	6.85
3	3	Southern California Edison	7,199	4.29
4	4	FPL Group* (FP&L)	6,289	1.77
5	6	Consolidated Edison	5,739	3.39
6	5	Commonwealth Edison	5,282	-8.50
7	7	American Electric Power*	5,167	0.53
8	8	Public Service Enterprise Group*	4,900	-0.10
9	9	Texas Utilities*	4,543	5.14
10	11	Houston Industries*	4,179	10.26

Entergy moved from 10th in 1989 to 9th in 1990, and Houston Industries moved into the Top 10 from 11th in 1989.

Residential usage fell

Average residential usage declined in 1990 for the second straight year. Adjusted figures show that average residential use in 1989 was 9158 kWh, down from 9174 kWh in 1989 and well below the record 9358 kWh posted in 1988.

Highest average residential use occurred in areas of lowest cost, such as the Pacific Northwest, where many customers are all-electric, or in Southern states where July and August temperatures send meters spinning. Idaho Power, with average residential use of 14,281 kWh, ranked first again despite a decline of 4.3 percent from '89. Second was Texas Utilities, 14,046 kWh, up 2.2 percent. In third position was Houston Industries, up 4.4 percent to 13,849 kWh. Rounding out the Top 10 were: 4) Gulf States Utilities, 13,795 kWh; 5) TECo Energy, 13,489 kWh; 6) Washington Water Power, 13,383 kWh; 7) Nevada Power, 13,331 kWh; 8) SCANA Corp., 13,330; 9) Puget Sound Power & Light, 12,848 kWh; and 10) Central Louisiana Electric, 12,526 kWh. CLECO was new to the top ranking this year.

Revenues gained

Total corporate revenues by the Top 100 electric utilities rose 3.5 percent, to $171.7 billion, an off performance from 1989, when revenue growth was 4.8 percent. As previously mentioned, however, the total was a new record for the industry.

Total corporate revenues include all activities of the Top 100, including electric and gas utility operations and all other business operations by the companies and their subsidiaries, both regulated and unregulated.

Revenues from electric operations represented 97 percent of total revenues for the Top 100 in 1990 and grew 3.5 percent to $166.8 billion. Revenues from electric operations were 90 percent of total utility revenues and grew by 4.1 percent in 1990.

Revenues from gas operations declined 2.8 percent, compared with a 5.2-percent increase in '89 (helped out by December 1989's cold snap). Gas operations represented 9 percent of utility operating revenues in 1990.

Revenues from non-utility operations, which include unregulated subsidiary activities of holding companies, amounted to just $4.9 billion, an increase of 2.9 percent in 1990 over 1989.

Seventy-nine companies reported revenue gains, about the same as last year, which meant that 21 reported

FINANCIAL STATISTICS

Company	Net Income Rank	Net Income % Gain	Revenue Rank	Revenue % Gain	Sales (KWH) Rank	Sales (KWH) % Gain	Int. Cov. Ratio 1990	Int. Cov. Ratio 1989	Earnings Per Share $ 1990	Price/Share 1990 (Dollars) High	Price/Share 1990 (Dollars) Low	% Change Long-Term Debt '89-'90
Portland General*	1	471.11	20	6.96	4	10.66	1.39	-0.13	2.17	22.125	14.875	-6.85
Boston Edison	2	330.22	67	-0.85	20	4.06	0.73	-0.34	2.01	20.250	16.500	13.19
Long Island Lighting	3	250.34	43	4.23	91	-2.48	0.52	-0.36	2.36	21.750	12.625	-0.09
Entergy*	4	201.21	21	6.93	12	5.44	0.75	-0.72	2.44	23.625	18.000	-3.76
United Illuminating	5	160.43	33	5.19	86	-1.93	0.45	-0.72	3.55	34.125	26.875	6.10
Pinnacle West Capital*	6	117.65	27	5.88	2	13.08	0.73	0.92	1.12	18.625	9.375	6.21
New England Electric*	7	89.00	6	12.92	77	-0.06	2.72	1.52	4.11	28.625	22.500	3.18
IE Industries*	8	80.98	39	4.74	65	0.77	0.93	1.31	4.10	28.125	23.000	-6.99
Northern Indiana Public Service	9	73.46	91	-2.47	38	3.03	1.20	0.62	1.81	19.250	15.750	-7.15
El Paso Electric	10	71.32	65	1.47	53	1.89	-0.57	-1.73	-0.96	9.125	3.500	8.93
Illinois Power	11	64.60	23	6.33	66	0.63	-0.58	-1.59	-1.53	19.375	12.750	-6.27
SCANA Corporation* (SCE&G)	12	48.10	71	0.88	35	3.36	NA	NA	4.44	35.750	30.250	-6.48
LG&E Energy Corp.*	13	37.22	63	1.74	3	12.03	1.72	1.30	4.31	42.000	35.250	12.13
Kansas Gas & Electric	14	35.76	12	9.95	78	-0.08	0.84	0.56	2.00	27.750	19.625	13.47
Washington Water Power*	15	31.27	37	4.85	9	6.15	1.40	1.07	3.46	31.000	25.500	-0.07
Detroit Edison	16	23.23	49	3.24	74	0.03	0.99	0.83	3.26	30.250	23.500	7.96
Utilicorp United	17	21.94	4	15.80	25	3.88	1.04	1.01	2.13	22.375	17.375	52.58
Central & South West*	18	16.34	18	7.65	28	3.77	1.11	1.11	3.79	46.000	36.625	-0.95
Wisconsin Power & Light	19	15.65	58	2.26	83	-0.99	2.05	1.86	2.23	25.250	20.000	12.42
Puget Sound Power & Light	20	14.93	32	5.35	17	4.22	1.43	1.24	2.16	22.500	18.625	2.65
Orange & Rockland Utilities	21	12.90	41	4.30	57	1.65	1.49	1.41	3.54	32.375	26.125	28.06
DPL*	22	12.21	85	-0.62	70	0.35	NA	NA	2.23	20.375	17.125	-0.42
San Diego Gas & Electric	23	11.97	25	6.13	16	4.50	1.81	1.73	3.52	46.250	39.000	4.88
Southwestern Public Service	24	11.24	94	-3.64	68	0.46	2.23	1.95	2.73	31.380	25.130	-7.86
Pacific Gas & Electric	25	11.21	10	10.27	10	6.15	1.11	0.96	2.10	25.325	20.000	-0.30
KPL Gas Service	26	9.81	59	1.96	73	0.12	1.27	1.32	2.25	25.125	19.750	8.11
Texas Utilities*	27	9.21	35	5.14	48	2.18	NA	NA	4.40	39.000	32.000	15.02
Empire District Electric	28	9.09	24	6.19	23	3.97	1.61	1.67	3.12	31.500	27.250	11.76
Dominion Resources*	29	8.52	93	-3.53	88	-2.03	1.03	1.05	4.38	48.875	41.375	-4.03
Oklahoma Gas & Electric	30	7.73	16	7.84	15	4.69	1.90	1.72	3.38	39.750	32.875	-0.09
DQE*	31	7.67	68	1.21	81	-0.75	0.83	0.72	2.24	25.250	20.375	-2.53
Madison Gas & Electric	32	6.96	67	1.37	39	2.98	1.54	1.37	3.06	35.500	31.250	-3.57
Central Hudson Gas & Electric	33	5.79	19	7.15	61	1.05	0.86	0.79	2.38	24.875	20.000	-90.92
Carolina Power & Light	34	4.96	57	2.41	89	-2.13	1.13	1.40	4.36	47.625	38.000	3.59
Union Electric	35	4.90	74	0.63	62	0.99	1.49	1.51	2.74	30.000	24.625	-7.53
Central Louisiana Electric	36	4.46	31	5.53	24	3.93	1.32	1.22	3.70	36.500	31.500	23.03
Southern Indiana Gas & Electric	37	4.23	50	3.13	22	3.99	1.87	1.66	3.02	33.375	27.875	7.09
TECO Energy*	38	4.13	46	3.49	18	4.18	2.28	2.16	2.45	33.875	26.250	-0.11
Delmarva Power & Light	39	3.83	54	2.73	45	2.33	1.40	1.42	0.60	21.375	17.000	11.85
MDU Resources Group	40	2.88	97	-6.17	87	-1.94	1.20	1.08	1.43	22.875	18.125	-1.89
Pacificorp	41	1.68	77	0.40	41	2.81	1.93	1.89	1.85	23.875	17.500	0.44
IPALCO Enterprises*	42	1.49	55	2.71	60	1.27	1.83	1.70	2.58	27.500	23.125	-0.40
Gulf States Utilities	43	1.28	34	5.18	11	5.46	-0.39	-0.36	-0.99	12.625	8.625	-13.12
Southern California Edison*	44	1.04	42	4.26	31	3.58	1.25	1.22	3.60	40.250	33.500	-0.22
Northeast Utilities*	45	0.92	28	5.77	72	0.22	0.99	0.92	1.94	22.625	17.875	-1.24
CIPSCO Inc.*	46	0.60	86	-0.64	71	0.25	1.61	1.59	1.92	23.250	19.500	0.00
New York State Electric & Gas	47	0.38	38	4.84	42	2.46	0.86	0.83	2.48	29.250	21.375	-1.77
Wisconsin Public Service	48	0.08	100	-86.37	49	2.18	NA	NA	4.40	39.000	32.000	7.08
Public Service Enterprise Group*	49	0.03	81	-0.10	84	-1.47	1.45	1.53	2.56	29.750	22.500	5.94
Iowa Southern*	50	-0.18	78	0.40	8	9.49	2.43	2.37	3.54	34.250	29.500	-0.41
Central Maine Power	51	-0.57	14	8.75	63	0.83	0.86	0.90	1.68	20.625	16.125	15.14
Kentucky Utilities	52	-0.85	44	4.11	33	3.44	2.85	2.93	1.97	21.625	17.250	3.06
Centerior Energy*	53	-0.91	53	2.83	93	-2.87	0.69	0.72	1.90	21.125	16.125	5.53
Otter Tail Power	54	-1.38	82	-0.17	36	3.29	2.28	2.23	1.99	26.750	22.000	13.42
General Public Utilities*	55	-1.50	52	2.91	67	0.61	1.44	1.50	5.02	47.250	38.500	1.27
TNP Enterprises* (Tex-NM Power)	56	-1.76	36	5.02	34	3.37	0.68	1.06	1.84	22.500	14.500	159.69
Allegheny Power System*	57	-1.82	62	1.75	94	-3.31	1.34	1.42	3.61	42.125	34.000	4.05
Public Service of Colorado	58	-1.83	84	-0.39	47	2.19	1.37	1.36	2.49	26.500	20.000	-7.85
Green Mountain Power	59	-2.19	56	2.50	40	2.83	1.24	1.59	2.29	27.125	21.250	6.38
Pennsylvania Power & Light	60	-2.37	66	1.37	79	-0.20	1.09	1.04	3.95	44.375	39.000	-6.54
Cincinnati Gas & Electric	61	-3.13	80	0.07	1	15.21	2.00	2.19	4.12	31.750	26.000	22.49
Public Service of New Hampshire	62	-3.33	29	5.77	100	NA	-0.84	-3.61	-4.98	3.875	2.125	0.00
Wisconsin Energy*	63	-3.73	92	-3.41	92	-2.62	2.31	2.33	2.77	32.500	26.625	-3.58
Central Vermont Public Service	64	-4.14	60	1.84	99	-10.47	1.18	1.25	2.43	29.500	21.875	13.11
St Joseph Light & Power	65	-4.34	73	0.85	44	2.37	2.47	2.42	2.48	28.250	22.750	-8.91
Public Service of Indiana	66	-4.66	96	-5.79	46	2.21	2.01	1.65	2.20	18.250	14.500	3.73
Iowa-Illinois Gas & Electric	67	-5.33	90	-1.83	50	2.16	1.72	1.84	1.99	23.250	18.750	-6.18
Interstate Power	68	-5.59	79	0.35	27	3.77	1.81	1.66	2.56	26.750	22.875	-4.93
Kansas City Power & Light	69	-5.76	45	4.06	26	3.77	1.28	1.20	3.11	35.875	29.125	-14.58
Duke Power	70	-5.85	70	1.16	76	-0.02	2.14	2.43	2.40	32.375	25.500	9.93
Consolidated Edison	71	-6.04	47	3.39	59	1.54	2.07	2.38	2.34	29.250	19.750	7.83
Potomac Electric Power	72	-11.28	69	1.20	52	1.91	1.41	1.74	1.62	24.000	18.000	18.57
Florida Progress* (FPC)	73	-11.92	30	5.76	43	2.39	1.68	1.73	3.21	40.500	33.500	2.47
Northern States Power	74	-12.49	40	4.31	13	5.29	1.83	1.91	2.83	40.500	28.375	-1.83
Atlantic Energy*	75	-14.93	64	1.67	54	1.83	1.42	1.72	3.02	38.500	31.875	-3.43
Rochester Gas & Electric	76	-16.18	89	-1.75	51	2.02	0.90	1.02	1.72	21.750	16.875	-5.63
Minnesota Power	77	-16.76	51	2.93	30	3.61	1.50	1.87	2.37	27.375	22.125	0.62
Houston Industries*	78	-17.90	11	10.26	37	3.04	1.63	3.17	2.67	37.125	30.625	-3.53
Idaho Power	79	-19.25			96	-7.46	1.21	1.46	1.91	29.375	22.750	3.52
Montana Power Co.	80	-19.29	83	-0.34	90	-2.34	0.94	1.07	1.84	21.750	17.375	6.64
Bangor Hydro-Electric Company	81	-20.45	8	11.02	82	-0.80	0.56	0.88	1.52	16.750	13.875	34.45
American Electric Power*	82	-21.07	76	0.53	56	1.68	1.13	1.19	2.65	33.125	26.000	-4.45
Ohio Edison	83	-23.69	48	3.27	85	-1.78	0.80	0.96	1.67	23.875	15.875	1.02
Southern Company*	84	-28.61	22	6.45	21	4.03	0.74	1.09	1.91	29.375	23.000	-1.36
Cilcorp*	85	-28.71	2	17.19	64	0.78	1.55	1.67	2.89	38.625	29.750	-0.04
Baltimore Gas & Electric	86	-29.10	17	7.74	80	-0.69	1.06	1.80	2.10	34.625	24.375	20.31
Midwest Resources Inc.*	87	-31.45	95	-4.15	29	3.68	1.13	1.18	1.25	19.250	18.000	-1.50
Hawaiian Electric*	88	-31.95	5	14.33	19	4.17	1.49	1.61	2.02	40.000	27.250	12.29
Eastern Utilities Associates*	89	-40.29	9	10.60	32	3.57	0.53	1.84	1.53	41.500	20.750	22.79
Commonwealth Energy System*	90	-47.13	72	0.86	95	-5.71	0.45	0.95	2.16	38.875	29.375	20.49
Nevada Power	91	-51.44	3	16.01	6	9.91	0.60	1.46	0.78	25.750	20.000	13.24
Niagara Mohawk Power	92	-61.57	15	8.56	69	0.42	0.13	0.35	0.30	14.750	11.750	2.43
Philadelphia Electric	93	-74.92	13	8.80	14	5.00	0.21	0.97	0.58	23.500	14.500	1.18
Sierra Pacific Power	94	-82.60	26	6.11	7	9.80	1.05	1.18	0.35	25.500	18.375	5.59
Centel*	95	-85.81	7	12.06	5	10.69	NA	NA	0.75	0.000	0.000	NA
Commonwealth Edison	96	-92.35	99	-8.50	55	1.71	0.07	0.95	0.22	37.875	27.250	5.63
Public Service of New Mexico	97	-113.25	98	-6.57	98	-10.47	-0.14	0.95	-0.23	15.500	8.125	-1.44
FPL Group* (FP&L)	98	-195.27	61	1.77	58	1.55	1.32	1.42	-2.86	36.500	26.125	4.97
CMS Energy*	99	-258.33	75	0.54	75	0.02	-1.65	1.66	0.00	38.500	24.875	3.46
Tucson Electric Power	100	-342.09	88	-1.69	97	-10.15	-4.17	-1.40	-15.50	19.000	5.500	-57.26

ALPHABETIC LISTING OF COMPANY PERFORMANCE

Company	Electric Sales (KWH) (millions)	Rank	Customers Served Electric Total	Electric % Gain	Gas Total	Gas % Gain	REVENUES Total $ (1000's)	% Electric	% Gas	Net Income After Tax $ (Thousands)
Allegheny Power System*	57,174	11	1,289,684	1.50	0	0.00	2,297,826	100.00	0.00	191,355
American Electric Power*	119,482	2	2,747,013	1.15	0	0.00	5,167,496	100.00	0.00	496,414
Atlantic Energy*	7,757	70	449,717	1.28	0	0.00	716,779	100.00	0.00	88,879
Baltimore Gas & Electric	24,620	31	1,030,973	1.86	520,034	0.06	2,159,263	78.00	17.29	172,939
Bangor Hydro-Electric Company	1,596	98	96,975	4.68	0	0.00	133,927	99.12	0.00	6,756
Boston Edison	14,314	48	677,667	0.69	0	0.00	1,258,546	100.00	0.00	77,788
Carolina Power & Light	40,385	16	966,776	1.71	0	0.00	2,617,107	100.00	0.00	361,687
Central*	2,939	92	136,169	0.06	0	0.00	1,149,323	15.11	0.00	63,014
Centerior Energy*	26,789	30	1,026,393	0.57	0	0.00	2,367,675	100.00	0.00	264,459
Central Hudson Gas & Electric	5,684	80	252,314	1.13	55,399	3.07	503,608	86.15	13.85	35,354
Central Louisiana Electric	5,637	81	201,763	1.15	0	0.00	333,978	100.00	0.00	41,663
Central Maine Power	9,213	86	482,796	1.38	0	0.00	772,601	99.09	0.00	45,142
Central Vermont Public Service	2,861	93	137,940	0.93	0	0.00	231,565	98.89	0.00	16,533
Central & South West*	50,013	13	1,560,000	0.91	0	0.00	2,744,000	95.12	4.77	356,000
Cilcorp*	5,026	85	186,558	0.64	190,306	0.57	537,461	53.61	25.74	34,504
Cincinnati Gas & Electric	22,006	34	679,761	1.63	399,980	1.85	1,438,468	77.92	22.08	212,571
CIPSCO Inc.*	7,515	72	307,848	0.32	158,936	0.56	600,772	82.76	17.24	65,756
CMS Energy*	29,673	26	1,475,000	1.51	1,362,000	1.79	2,977,000	62.28	35.74	(494,000)
Commonwealth Edison	73,448	5	3,218,426	1.22	0	0.00	5,261,986	100.00	0.00	45,796
Commonwealth Energy System*	6,874	74	346,679	1.44	224,116	0.20	812,805	68.09	30.03	21,224
Consolidated Edison	35,474	21	2,936,743	0.55	1,029,761	0.12	5,738,888	82.68	12.16	534,415
Delmarva Power & Light	11,081	57	388,277	1.97	85,044	2.61	811,238	87.33	9.84	89,597
Detroit Edison	40,596	15	1,927,466	1.16	0	0.00	3,306,739	99.17	0.00	479,280
Dominion Resources*	54,774	12	1,778,693	1.80	0	0.00	3,532,500	97.99	0.00	445,700
DPL*	12,628	54	452,494	0.76	278,490	0.75	954,512	76.88	21.47	153,003
DQE*	13,637	49	574,525	0.34	0	0.00	1,134,283	100.00	0.00	121,672
Duke Power	66,982	7	1,632,100	2.32	0	0.00	3,681,467	100.00	0.00	538,188
Eastern Utilities Associates*	5,310	83	289,003	12.63	0	0.00	451,867	95.87	0.00	24,407
El Paso Electric	5,984	78	243,736	1.92	0	0.00	432,501	99.34	0.00	(33,745)
Empire District Electric	3,245	91	118,059	1.74	0	0.00	141,612	99.46	0.00	18,296
Entergy*	82,069	9	1,722,698	0.90	156,499	0.17	3,982,062	97.79	2.21	478,318
Florida Progress* (FPC)	27,144	29	1,157,965	2.56	0	0.00	2,010,800	83.07	0.00	164,80
FPL Group* (FP&L)	65,662	8	3,208,196	2.73	0	0.00	6,269,038	77.90	0.00	(391,005)
General Public Utilities*	38,712	17	1,862,721	1.15	0	0.00	2,996,011	100.00	0.00	278,234
Green Mountain Power	1,769	97	76,947	2.08	0	0.00	147,633	100.00	0.00	8,545
Gulf States Utilities	28,964	28	570,738	1.32	83,164	0.58	1,690,685	94.44	1.95	(107,024)
Hawaiian Electric*	7,968	69	346,417	1.94	0	0.00	1,010,765	69.73	0.00	43,602
Houston Industries*	59,557	10	1,380,597	2.00	0	0.00	4,178,576	83.01	0.00	339,454
Idaho Power	12,960	53	291,810	2.61	0	0.00	464,935	100.00	0.00	64,962
IE Industries*	4,521	88	209,689	0.60	123,345	0.66	453,919	71.58	21.37	59,898
Illinois Power	15,941	45	560,033	2.06	396,891	3.08	1,395,690	77.71	22.29	(115,323)
Interstate Power	4,523	87	158,289	0.51	46,511	1.00	271,653	81.19	18.81	27,026
Iowa Southern*	2,363	94	94,576	0.42	38,449	0.52	138,241	77.55	20.44	20,432
Iowa-Illinois Gas & Electric	4,541	86	193,961	0.75	231,912	0.96	485,062	59.94	40.06	53,490
IPALCO Enterprises*	11,391	56	384,884	1.46	0	0.00	611,160	95.28	0.00	96,939
Kansas City Power & Light	10,605	59	412,585	0.76	0	0.00	761,157	99.65	0.00	96,372
Kansas Gas & Electric	8,937	67	256,216	0.55	0	0.00	586,641	98.20	0.00	63,363
Kentucky Utilities	13,587	50	417,300	1.21	0	0.00	553,781	100.00	0.00	106,216
KPL Gas Service	9,810	62	304,804	0.89	1,068,198	0.18	1,149,755	40.33	59.67	77,875
LG&E Energy Corp.*	11,579	55	324,538	1.24	246,556	1.20	698,959	74.47	24.23	91,422
Long Island Lighting	16,386	44	1,001,440	0.50	430,571	1.06	2,446,847	85.24	14.76	263,156
Madison Gas & Electric	2,267	95	112,374	1.19	67,331	3.28	220,568	63.41	36.28	22,029
MDU Resources Group	2,102	96	109,489	-0.18	177,500	0.95	247,086	48.26	51.74	16,984
Midwest Resources Inc.*	10,932	58	409,105	0.97	356,061	2.73	894,357	64.77	29.19	62,299
Minnesota Power	10,270	61	120,994	1.23	17,771	-1.22	477,477	84.24	2.41	70,020
Montana Power Co.	8,864	68	250,083	0.93	113,647	2.34	450,338	75.72	24.28	44,331
Nevada Power	9,222	65	347,969	9.41	0	0.00	481,045	100.00	0.00	24,992
New England Electric*	21,381	35	1,256,656	0.26	0	0.00	1,855,427	9.35	0.00	262,050
New York State Electric & Gas	17,947	43	769,023	1.46	146,037	2.55	1,496,780	8.16	10.84	145,351
Niagara Mohawk Power	35,544	20	1,520,000	1.06	475,000	1.93	3,154,719	8.61	15.39	40,578
Northeast Utilities*	29,611	27	1,260,181	0.68	0	0.00	2,616,319	9.95	0.00	211,007
Northern Indiana Public Service	13,328	52	381,909	1.18	594,927	1.56	1,520,995	5.90	41.10	125,088
Northern States Power	36,586	19	1,318,935	1.45	358,155	3.74	2,064,548	8.72	15.28	177,303
Ohio Edison	31,310	24	1,035,416	0.95	0	0.00	2,225,524	9.86	0.00	254,048
Oklahoma Gas & Electric	20,424	37	641,994	0.54	0	0.00	1,230,770	100.00	0.00	136,731
Orange & Rockland Utilities	4,054	89	248,758	1.25	105,528	1.29	559,248	78.95	21.05	49,839
Otter Tail Power	3,364	90	121,287	-0.01	0	0.00	172,541	100.00	0.00	22,749
Pacific Gas & Electric	74,057	4	4,197,000	2.12	3,450,000	2.31	9,470,092	7.30	25.70	889,169
Pacificorp	49,697	14	1,236,221	1.53	0	0.00	2,182,385	9.96	0.00	451,799
Pennsylvania Power & Light	34,603	22	1,161,228	1.54	0	0.00	2,388,720	9.93	0.00	297,781
Philadelphia Electric	34,310	23	1,465,592	0.85	47,287	2.09	3,705,161	8.61	10.39	123,871
Pinnacle West Capital*	19,776	40	606,605	1.98	0	0.00	1,596,639	9.47	0.00	97,333
Portland General*	19,837	39	584,025	3.22	0	0.00	852,406	9.39	0.00	99,952
Potomac Electric Power	23,932	32	648,140	1.57	0	0.00	1,411,713	9.72	0.00	154,601
Public Service Enterprise Group*	36,723	18	1,862,947	0.77	1,464,803	1.11	4,800,135	6.42	25.76	542,278
Public Service of Colorado	20,148	38	990,633	0.71	865,399	1.45	1,733,939	6.09	32.40	133,705
Public Service of Indiana	21,147	36	594,068	1.33	0	0.00	997,817	9.75	0.00	119,393
Public Service of New Hampshire	0	100	0	NA	0	0.00	660,122	100.00	0.00	(210,012)
Public Service of New Mexico	7,168	73	291,695	1.61	345,719	1.91	855,134	63.30	35.33	(9,560)
Puget Sound Power & Light	19,572	41	745,524	3.90	0	0.00	935,273	100.00	0.00	119,948
Rochester Gas & Electric	7,711	71	328,885	0.97	261,516	1.25	830,891	71.54	28.46	59,881
San Diego Gas & Electric	15,089	47	1,095,168	2.39	673,481	1.81	1,771,868	7.55	2.04	196,978
SCANA Corporation* (SCE&G)	15,385	46	446,514	2.65	220,817	7.37	1,133,222	7.84	2.80	181,603
Sierra Pacific Power	5,793	79	239,449	3.12	77,339	4.88	470,705	8.95	1.03	7,828
Southern California Edison*	71,614	6	4,031,678	2.30	0	0.00	7,198,531	9.05	0.00	786,360
Southern Company*	142,388	1	3,283,000	1.39	0	NA	7,975,000	9.61	0.00	604,000
Southern Indiana Gas & Electric	5,557	82	114,655	0.71	95,488	1.31	326,415	7.59	19.21	36,409
Southwestern Public Service	18,178	42	349,893	0.62	0	0.00	769,944	9.45	0.00	111,563
St Joseph Light & Power	1,336	99	59,284	0.65	6,145	1.10	79,752	8.24	4.38	10,215
TECO Energy*	13,436	51	461,497	1.77	0	0.00	1,097,063	8.72	0.00	139,358
Texas Utilities*	83,728	3	2,152,179	.95	0	0.00	4,542,623	100.00	0.00	650,802
TNP Enterprises* (Tex-NM Power)	6,422	76	203,121	1.00	0	0.00	397,289	100.00	0.00	15,137
Tucson Electric Power	6,744	75	289,055	1.60	0	0.00	499,037	100.00	0.00	(397,226)
Union Electric	30,445	25	1,086,609	0.73	112,170	0.81	2,023,017	9.86	3.97	279,526
United Illuminating	5,205	84	307,116	-0.15	0	0.00	593,963	9.44	0.00	49,297
Utilicorp United	6,076	77	257,300	2.02	570,700	6.69	894,370	3.96	56.34	58,912
Washington Water Power*	10,597	60	250,347	1.63	94,274	4.86	554,441	7.91	10.98	79,185
Wisconsin Energy*	23,657	33	896,393	1.53	0	0.00	1,442,502	8.75	0.00	186,722
Wisconsin Power & Light	9,505	63	345,123	2.64	124,698	2.96	618,491	7.12	17.85	59,538
Wisconsin Public Service	9,288	64	328,159	1.73	176,429	2.27	588,973	7.22	23.78	45,730

TABLE I Top 10 in KWH Sales

RANK '90	RANK '89	COMPANY	KWH SALES (millions)	'90 % Change
1	1	Southern Company*	142.4	4.00
2	2	American Electric Power*	119.5	1.89
3	3	Texas Utilities*	83.7	2.18
4	4	Commonwealth Edison	74.1	1.71
5	8	Pacific Gas & Electric	73.4	6.15
6	5	Southern California Edison	71.6	3.89
7	6	Duke Power	67.0	-0.02
8	7	FPL Group (FP&L)*	65.7	1.55
9	10	Entergy*	62.1	5.44
10	11	Houston Industries*	59.6	3.04

negative revenue changes.

Median revenue change was 2.9 percent. It was 3.3 percent in 1989.

The largest revenue producers are ranked in Table II.

Net income fell

Net incomes of the Top 100 electric utilities dropped 5.7 percent in 1990, to $14.0 billion. It was the third straight year of declining net income for the Top 100. The 1990 total was 16.8 percent below the record net income figure of $16.7 billion posted in 1984.

The fall-off in net incomes is the result of slow kWh growth and unfavorable commission rate decisions, coupled with steadily increasing operating costs.

Utility managements reported exerting continued strong pressures to reduce operating costs, but were unsuccessful in stemming the tide of adverse figures.

Utility operations were responsible for producing $13.5 billion of total corporate income of $14 billion. This means that utility operation incomes produced 96.4 percent of utilities' profits. Non-regulated activities provided just $500 million of net income.

Considering that more than 38 holding companies reported to *EL&P* for 1990, the average of $13 million per company is disappointing, to say the least.

Fifty companies reported negative income growth, compared with 38 a year ago.

Median income growth was -0.18 percent in 1990. A year earlier, the median growth was +0.26 percent.

Among the biggest income producers, shown in Table III, eight of the ten biggest are repeaters from last year. The two newcomers were Detroit Edison and Entergy (formerly Middle South Utilities).

Notable by its absence among the 10 biggest income producers was Commonwealth Edison, which posted net income of just $45.8 million, down 92.4 percent from $599 million in 1989. CECo has been plagued by three nuclear plants that had been operating without rate-base relief because of extended challenges. CECo had a rate plan rejected and refund mandated by the Illinois Supreme Court last summer.

Sagging per-share performance

Earnings per common share declined 4.0 percent in 1990, to an average of $1.98 per share. A year ago, EPS was $2.06 per average share (restated). The drop reflects both the generally lower income production and additional shares outstanding.

A total of 65 companies reported earnings higher than the average, compared with 64 a year ago.

Median EPS rate of change was just 0.2 percent, down from 0.31 percent in 1989.

Shares of the Top 100 electric utilities hit an average high of $28.87 in 1990, a dip of 5.6 percent from 1989's average per-share high price. The low average per-share price in 1990 was $22.41, 4.1 percent below the average per-share low price of $23.38.

WAYNE BEATY, Senior Editor—T/D

New reliability indices are needed, according to survey

Derek HasBrouck
Theodore Barry & Associates

LOS ANGELES—Do electric utility customers receive reliable electric service? Most utility engineers, regulators, and independent analysts would answer with an emphatic yes! They might even go so far as to question if the level of reliability currently provided is too high.

Yet, in a recent survey of electric utility executives in the transmission/distribution area, customer service improvements were the top priority of 7 of 10, and 68 percent of these utilities have formal initiatives underway to improve the quality of service they deliver (Fig. 1).

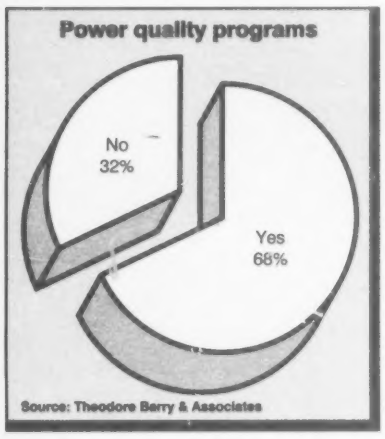

Figure 1. Some 68 percent of utilities surveyed have power-quality improvement programs despite an overall industry conception of more than adequate reliability.

Are these two concepts really contradictory? The industry has relied on standard reliability measures that can be characterized as introverted engineering measures. The most common of these, the Average Service Availability Index (ASAI), is a broad index that measures the percentage of the hours per year that electric service is available. Based on a survey of 100 investor-owned utilities, the average ASAI value is 99.985, with 99.995 and 99.800 as the high and low values, respectively (Fig. 2).

This outstanding average performance and these seemingly small deviations support the traditional viewpoint that the industry provides outstanding service reliability.

Traditional index questioned

This traditional viewpoint can be seriously questioned on two fronts. First, do these indices accurately reflect service reliability from the *customer's* perspective? Second, do utilities collect, report, and use these indices to manage the business effectively?

The engineering indices strive to measure the percentage of the year that service is available. On the surface, this is congruent with the customer's desires. However, the indices include only sustained outages longer than a specified minimum duration (Figs. 3, 4). This duration, which varies by company, is typically between one minute and five minutes, although some companies exclude outages up to an hour in duration.

Thus, all momentary outages and many short duration outages are ig-

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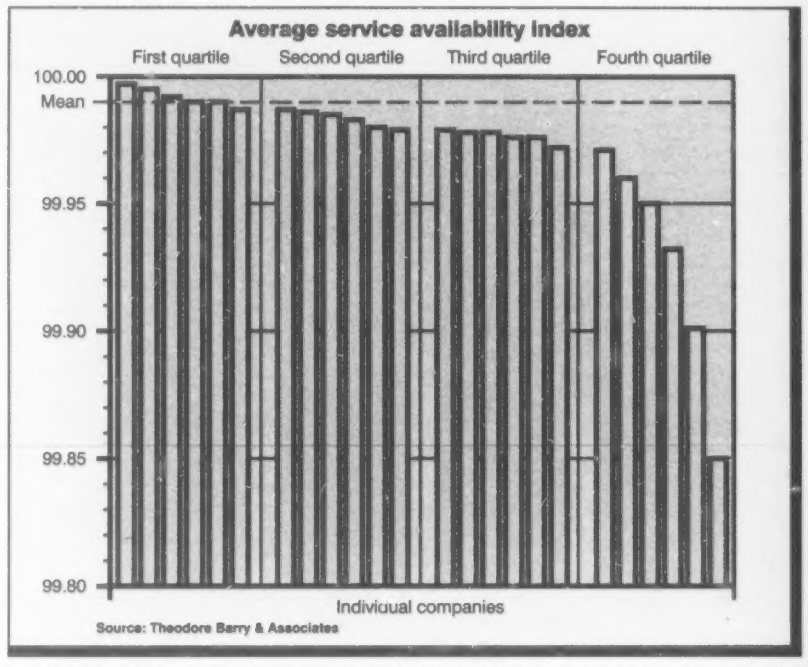

Figure 2. The average service availability index (ASAI) is a high 99.985, but this index may not adequately measure reliability from the customer's viewpoint.

Accurate, timely weather data is a must

STATE COLLEGE, PA—Commercial weather services have supplied forecasts to utilities since the 1950s, but the number of utilities using these services has grown tremendously over the past decade. The growth is due in part to the increased ability of commercial weather services to give utilities accurate, timely and customized forecasts.

Accu-Weather Inc., State College, PA, is one of the weather services companies that can take a standard National Weather Service forecast that might call for "a 50 percent chance of rain tonight," and time customize it to "rain this evening only," or "rain after midnight," as well as predicting the intensity: "heavy, strong thunderstorms this evening, light showers after midnight."

Pinpointing the daily high and low temperatures help system dispatchers determine the times of peak load and prepare accordingly. Commercial weather services predict temperatures to the nearest degree and often into three-hour or even hourly intervals.

Customized reports

A utility that serves a large area will most likely have several different weather patterns at the same time. National Weather Service forecasts do not typically include such details, but a breakdown is available commercially.

Accu-Weather's real-time database provides an array of data types from more than 1000 locations throughout the U.S. and Canada such as: temperature, humidity, wind speed and direction, sky cover, precipitation, atmospheric stability, and barometric pressure. Data are analyzed by the 72 professional meteorologists and monitored hourly, 365 days per year. Updates are sent to utilities based on anticipated variations, such as temperature changes or the development of poten-

Continued on page 34

Accu-Weather Inc.'s realtime database provides an array of data types from more than 1000 locations throughout the U.S. and Canada such as: temperature, humidity, wind speed and direction, sky cover, precipitation, atmospheric stability, and barometric pressure for use by utilities in planning for normal and emergency-related weather problems.

Is single-phase testing for all meters adequate?

ST. LOUIS—Single-phase testing of both 1-phase and 3-phase meters has become the preferred method in recent years. Utilities have drifted away from 3-phase testing primarily because of the cost of test boards, but also because 3-phase test boards are cumbersome to use. With today's technology, however, utilities now can purchase test boards that offer both single- and three-phase-testing.

In order to accurately determine the available options and desirability of continuing with only single-phase testing or to invest in some of the latest technology in three-phase test boards, a thorough investigation of the accuracy of meter testing was needed.

Several types of meters would have to be tested that would realistically portray actual operating experience.

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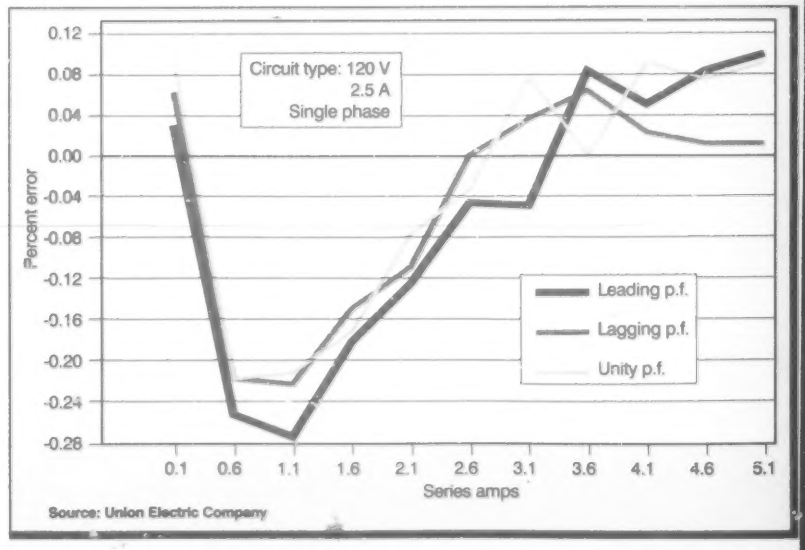

Figure 1. Single-phase testing at 120 V and 2.5 A yields a relatively flat percent-error curve for meter type DW, Form 5A, meter code D4-A, except for light loads between 0.2 and 2.2 A.

from page 32

New reliability indices needed...

nored by these indices. These approaches presume the customer's preference (assuming costs are held constant), is to tolerate short interruptions in order to have more total hours of service available.

Some utilities disagree. They have instituted programs to minimize momentary outages at the expense of incurring additional sustained outages. Since instituting these programs, customer complaints have gone down, and qualitative customer service analyses suggest they are happier with this new level of service. Unfortunately, the reliability indices have, of course, declined as a result. Is this better service or not?

Customers determine quality

Because the customer ultimately determines value, more satisfied customers are a clear indication that this type of program improves value to the customer. The challenge is to devise indicators and barometers to help management define, measure, monitor, evaluate, and improve the customer's *perceived value*.

The first requirement for successful management of an issue or an organization is to have the right information. Useful customer-oriented reliability and customer-service measures or indicators are not now widely available to managers.

Today, introverted engineering measures are not adequate. About 25 percent of investor-owned utilities do not even track the existing ASAI indices. Of the 75 percent that do, many do not collect and report the indices in a rigorous fashion.

Thus, reliability information available to the average T&D executive to support operating decisions is very limited and of low quality.

Some better indices

Several utilities use reliability indicators that come closer to the customer's perspective. Tracking momentary interruptions per customer, customer outage minutes, and monitoring waveform deviations at the meter are all examples of technical monitoring that come closer to the customer's perspective today.

Surveys targeted at customers who have recently suffered interruptions are used to understand the customer perceptions of reliability and service. Each of these measurement techniques allows management to understand past performance and set goals.

To deliver the *desired customer value level*, the manager can use these measures to quantify the expected impact of particular intitiatives and to evaluate each initiative relative to the required resource investment. The quantified expected-impact of each approved intitiative allows management to monitor implementation, make effective midcourse management intervention, and evaluate the ultimate success of each initiative. However, management's ability to actively manage service reliability and perceived customer value depends heavily on the availability of appropriate customer focused information.

Service-reliability management offers a golden opportunity to create customer value and, indirectly, shareholder value. The opportunity exists to differentiate your services from the competition in the *eyes of the consumer* and to strategically position the utility for a more competitive marketplace.

To capitalize on these opportunities, management must revisit its traditional, introspective view of service reliability and, instead, focus on the customer's perspective. Today's service reliability management challenge is to define, collect, and put to use the required types of customer-focused service reliability and service quality information.

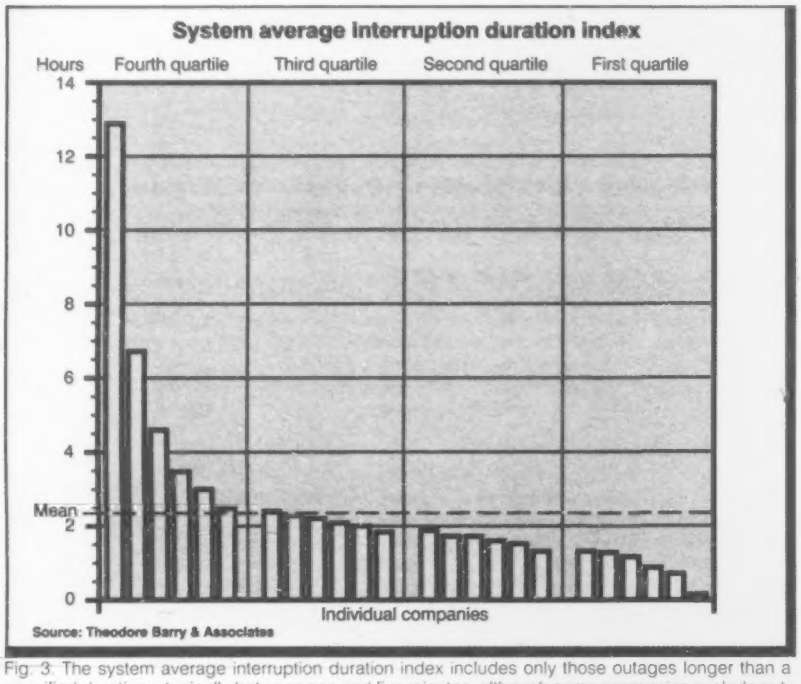

Fig. 3. The system average interruption duration index includes only those outages longer than a specified duration—typically between one and five minutes, although some companies exclude outages up to an hour in duration.

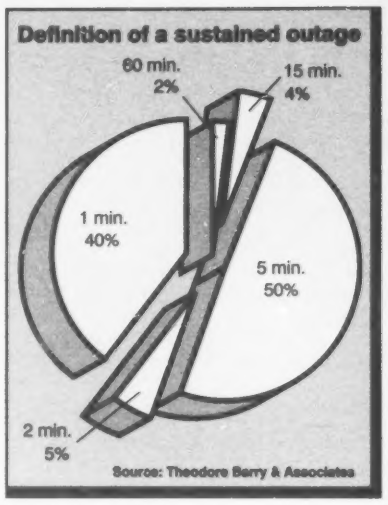

Fig. 4. The definition of a sustained outage ranges from one minute to over an hour. Most fall between one and five minutes.

BPA stops public use of ROW

PORTLAND, OR—Bonneville Power Administration is discouraging new uses of its power line rights-of-way that might expose the public to electric and magnetic fields (EMF).

In the past, BPA has encouraged multiple use of rights-of-way for parks, soccer fields, playgrounds, hiking trails, etc. Renee Ferrera, chief of BPA's land management section, says, "BPA has set a two-year moratorium on people-intensive uses of our rights-of-way."

Where BPA owns the right-of-way, it will refuse to issue a permit for public use and where only an easement is owned, it will attempt to prohibit projects that would increase public exposure. Where legal prohibition fails, BPA will discourage developers by providing information about the possible health effects of exposure to EMF.

Fred Johnson, director of BPA's division of system maintenance, points out, "We do not see, at this point, any demonstrated relationship between EMF and health effects. We want to allow some time to let the research catch up." BPA will not enforce the new policy retroactively but will apply only to new uses of power line corridors.

The moratorium will also help BPA with a problem unrelated to EMF. Encroachments that interfere with operations and maintenance is a growing problem. BPA says that people are building onto or using its rights-of-way in ways that conflict with its property rights.

Bulletin predicts sunspot activity

BOULDER, CO—Induced ground currents produced by solar disturbances in the earth's magnetic field can and have caused severe power disturbances. They can affect both transmission and distribution systems through low-frequency (almost dc) fluctuations that can saturate transformer cores, trip capacitor banks and depress voltage.

In an effort to help protect vital system components, the National Geophysical Data Center (NGDC) publishes a monthly Solar Indices Bulletin that details the level of solar activity for the past 30 days and predicts sunspot counts for the coming 12 months.

The bulletin includes explanatory text and a summary of the current solar cycle. The information is helpful in determining which phase of the current cycle we are in and can be used to mitigate the effects of solar activity.

Subscription

A 1-year subscription to the monthly bulletin is $20 and can be ordered from:
National Geophysical Data Center, NOAA/NESDIS E/GC4, 325 Broadway, Department 861, Boulder, CO 80303; Phone: 303/497-6958.

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